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a field winding wound a predetermined number of turns into multiple layers on said cylindrical portion of said bobbin of said rotor; and

a recessed groove formed in an inner surface of said first annular flange portion from an outer circumferential end of said first annular flange portion to an inner circumferential end thereof,

wherein said field winding has a flat rectangular shape in which a pair of opposite flat surfaces are parallel,

said field winding is wound onto said cylindrical portion of said bobbin wherein said pair of opposite flat surfaces face an inner circumferential side and an outer circumferential side, respectively, relative to a radial direction of said cylindrical portion,

said bobbin is formed to have a field winding mounting portion in which a radial length thereof is shorter than an axial length thereof, and

a starting portion of said field winding is housed in said recessed groove so as to make said opposite flat surfaces square with an axis of said bobbin.